

# Half a Century of Geology Research



Phosphogenic sediment system from the Triassic in Spitsbergen, with the Hornsund fjord in the background

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**Studying the evolution of geosystems over geological timescales is the main aim of contemporary geology, and the most important task currently being pursued at the PAS Institute of Geological Sciences**

Three research centers in Warsaw, Kraków, and Wrocław, a host of doctoral students, several laboratories, libraries and a museum: they all come together to form the PAS Institute of Geological Sciences. The Institute conducts studies into the age of rocks and minerals and their genesis, reconstructs the evolution of various rock strata, and pursues research into geological environments. It particularly focuses on the use of such methods as iso-

tope geochemistry, mineralogy, petrology, sedimentology, tectonics, stratigraphy, and hydrogeology.

## 56 years with the Institute of Geological Studies

The facility was first founded on 3 January 1956, then as the PAS Laboratory of Geological Studies, by a resolution of the Polish Academy of Sciences and at the initiative of Professors Jan Samsonowicz, Roman Kozłowski, and Stefan Zbigniew Różycki. Between 1959 and 1963, it operated jointly with the PAS Museum of Earth Sciences. In June 1979, another PAS resolution changed the Laboratory's status into that of a fully-fledged PAS Institute.

Its first director between 1956 and 1959 was Prof. Samsonowicz; the position is now held by Prof. Marek Lewandowski, who has been director since 2008. The Institute has been awarding PhDs since 1960, and DSc (*habilitation*) degrees since 1979.

The PAS Geological Museum in Kraków holds 192 archive collections of minerals, rocks, fossils, and meteorites (including a collection donated by prominent early

geologist Ignacy Domeyko in 1865). The Institute also publishes the monograph *Studia Geologica Polonica* and the journal *Geologia Sudetica* (jointly with the Institute of Geological Sciences at the University of Wrocław).

### Scholars, researchers, explorers

Scientists from the PAS Institute of Geological Sciences have been instrumental in shaping and advancing the Earth sciences. For example, Prof. Krzysztof Birkenmajer discovered the only exposed geological tertiary glaciation in Western Antarctica and authored scientific papers on the geology of the Pieniny Mountains and polar regions. Prof. Kazimierz Smulikowski and his team conducted petrological and mineralogical studies of magma and metamorphic rock, producing new classifications and writing a mineralogy textbook. Prof. Ryszard Gradziński has done extensive research as part of Polish paleontological expeditions to the Gobi Desert; his sedimentology textbook written with other outstanding Polish geologists has been used by generations of Earth sciences students. In the 1970s, Prof. Juliusz H. Teisseyre and Prof. Andrzej Żelaźniewicz were the first scientists in Poland to introduce state-of-the-art methods for analyzing structural and petrological properties of metamorphic rock, improving research into the geological history of the Sudeten Mountains. Prof. Środoń is the author of Poland's most frequently quoted publication in the Earth-sciences field. Prof. Nonna Bakun-Czubarow has conducted extensive research into rocks formed under ultra-high pressures, revealing many secrets of the structure of the Earth's mantle; scholars of the quaternary have been tracing the history of changes occurring to Poland's natural environment during this period.

### Goal-focused

The use of increasingly advanced IT and analytical tools has enabled scientists at the Institute to expand their research areas. The Institute conducts geochemical studies in locations as far afield as Japan, China, Argentina, Australia, and the Antarctic. Research is also ongoing into sediments in the Atlantic Ocean.

The Institute runs the ATLAB project, financed by the EU's 7th Framework Programme as part of the Regional Potential (RegPot) activities. The ATLAB (Action Towards Laboratories Enhancement and Know-How Exchange for Advanced Research on Geosystems) center, an interdisciplinary research institution and an integral part of the PAS Institute of Geological Sciences, specializes in devising methodologies and using isotope geochemistry as the main tool in innovative studies combining contemporary geology, environmental protection, and state-of-the-art technologies. The project is coordinated by Prof. Marek Lewandowski, and it is expected to conclude in 2015. Its main aims are to develop novel research equipment, to

create strong and multilateral links with partners from the public and private sectors, and to enhance human potential. The international project also strives to improve partnerships with European researchers and integration within the European Research Area (ERA), to build closer ties with the industry, and to expand the Institute's capacity for innovation.

The Institute is also engaged in projects together with major Polish companies such as KGHM, international oil companies, institutions providing isotope geochemistry services, and geophysics organizations searching for prospective deposits of substances such as unconventional hydrocarbons.

In 2011, in conjunction with businesses and other research institutions (the Polish National Geological Institute, the PAS Institute of Geophysics), the Institute started a 15-year-long geology and geophysics research project called PolandSPAN. The proposed research using reflection seismology should provide data to improve our understanding of Poland's regional geology. The project covers most of the tectonic units in Poland in an integrated and methodologically-consistent way.

In 2011, the PAS Institute of Geological Sciences completed 7 research projects; there are 25 ongoing projects financed externally, 6 internally-funded projects for young researchers, and 22 projects outside the Institute. A newly established avenue of research involves geological studies of Mars, financed by the Foundation for Polish Science as part of the TEAM program. The Institute employs a staff of 108 people, including 50 researchers.

The PAS Institute of Geological Sciences is a dynamically-growing institution focusing on the implementation of innovative research methods and collaboration with many other scientific institutions. ■



Bartosz Budzyń

"Night of Scientists" event, familiarizing the public with research work